Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
	)	
Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems	)	PR Docket No. 93-61
	)	
	)	
	)	
	)	

DOCKET FILE COPY ORIGINAL

To: The Commission

REPLIES OF MOBILEVISION, L.P.,
IN RESPONSE TO OPPOSITIONS AND COMMENTS

Pursuant to Section 1.429 of the Commission's Rules, MobileVision, L P., ("MobileVision"), by its attorneys, hereby responds to various of the Opposition Petitions of the Report and Order ("Order") issued by the Federal Communications Commission in the above captioned proceeding.

I. Introduction

In general, the comments of multilateration LMS suppliers indicate considerable agreement on several salient issues. Likewise, the various proponents in the Part 15 community appear in agreement. Unfortunately, the Part 15 community agreement is merely a continuation of its attack on LMS in general and multilateration LMS in particular in an effort to achieve co-equal status for themselves under the guise of sharing the band. While agreeing with the Order in areas that are favorable to their cause, they have attacked any provision favorable to licensed services in the band, taking a hardline position against issues with which they have no experience or knowledge, and as to which, not surprisingly, they offer little or no credible support.

MobileVision specifically opposes the comments of The Ad Hoc Coalition of Natural Gas Utilities ("Utilities"), Itron (a meter reading concern that has announced a joint venture with Metricom), A T & T (an investor in Cellnet), The Part 15 Coalition (the "Coalition") (apparently principally financed by Metricom), the Wireless Consumer Communications Section of the Telecommunications Industry Association ("TIA"), Cellnet Data Systems ("Cellnet"), and Metricom and Southern California Edison Company ("Metricom"). Each of these are either providers, investors or spokespersons of systems that intend to deploy wide area networks of Part 15 devices using outdoor antennas mounted as high as possible. Their systems stretch the intent of Part 15 of the Commission's Rules beyond recognition. In fact, contrary to their claims regarding LMS systems, it is these types of Part 15 systems (as MobileVision has submitted in ex parte demonstration and diagram in December of 1994) that have the most devastating potential for interference to other legitimate Part 15 devices in the band. The Commission should not recognize the demands of these Part 15 Community commenters for co-equal status with licensed service in the ISM band and disregard such proposals[1] as lacking merit and improperly sought in this proceeding.

While there is considerable agreement within the multilateration LMS community, there are still issues raised by SBMS and others which are misguided and, if adopted, could damage the viability of the LMS industry for the long term. SBMS's proposals serve only its status as a cellular provider whether or not such proposals will contribute to the development and deployment of LMS services. Its proposal to ban voice services, for example, stems from its existing services as a cellular provider and would preclude any further, even if minimal, competition (and consumer choice) for such services. Many commenters within the Part 15 community have indicated that voice should be prohibited, an ironic position

---

1 See, e.g., Cellnet Petition for Reconsideration and Clarification, April 24, 1995, p.3: "Cellnet continues to believe that the Commission should reclassify Part 15 devices as co-primary in certain parts of the spectrum, much like it has done in creating the unlicensed personal communication service device regulations. To that end, reconsideration of the policy decision to retain secondary status of Part 15 devices in all portions of the 902-928 MHz band is clearly warranted, thereby eliminating the need for the existing height/ power/antenna gain thresholds adopted in the Report and Order."

considering that there is no prohibition against voice for unlicensed Part 15 devices. Their transparent reason is the attempted restriction of LMS from competing with Part 15.

Pinpoint and Uniplex continue to wage a lost war for sharing. Notwithstanding the extensive record developed in this proceeding that clearly demonstrates that sharing is not feasible and the Commission's own concurring comments in its Order, they persist in their vain effort to achieve a result unsupported by the rest of the multilateration LMS community or the Part 15 community. MobileVision requests that the Commission dismiss such appeals for sharing since they are technically flawed, are without merit and without support among other service providers and inconsistent with all other aspects of the band plan adopted.

II. Grandfathering rules should be slightly modified but must be retained

Contrary to the assertions of SBMS and the Part 15 Community, the grandfathering rules put forth in the Rule should be retained, albeit with slight modification. These rules, with the minor modifications proposed by MobileVision and Pinpoint,[2] ensure the rapid introduction of LMS services to the public, while at the same time protecting the investment of those pioneers and entrepreneurs who have invested in deployment of multilateration LMS systems. MobileVision does not favor Pinpoint's 25 BTA limitation, however. Accordingly, MobileVision urges the Commission to adopt the proposals made in Section II of MobileVision's Petition for Reconsideration.

III. The permitted uses and interconnection for LMS as defined the Report and Order should not be further restricted

By submission of December 12, 1994, Teletrac, Uniplex and MobileVision collectively submitted a consensus position in favor of interconnection of LMS services. Those commenters that have asserted that MobileVision stands alone in its views regarding interconnect and voice ignore that consensus position as well as the positions in the most recent filings. Most

---

2 Opposition of Pinpoint Communications, Inc., May 24, 1995, at 22.

commenters favor data interconnection and Teletrac's Consolidated Opposition of May 24, 1995 contains considerable support for voice. Metricom and the Part 15 community claim that voice is not necessary for emergency situations, a fact soundly rebutted by Teletrac.[3] Teletrac, agreeing with MobileVision position, aptly states that "[I]n essence, it will the market that determines what service will make the most use of the spectrum. Thus, if the public finds LMS useful, cost effective and unique compared to other alternatives, the public will pay for that service. If not, there will not be a proliferation of LMS systems and the Part 15 proponents' unfounded fears will be alleviated."[4] Investors have been clear that the limitation of services in the Order is the principal hurdle to financing these systems.

TIA and Part 15 suppliers are strong supporters of taking the "S" out of "LMS." The only reason given by TIA in opposition to voice and interconnect services is that such service "would lead to increased levels of interference with other users of the band."[5] If this argument were valid, all wireless services should be prohibited. But it is not accurate. As noted above, MobileVision has demonstrated in its ex parte presentation to OET and Commission staff in December 1994 that it is not voice and data interconnection that will increase interference to harmful levels but systems such as Metricom that will cause that intolerable interference. LMS, in common with most new wireless services, is being introduced so as to provide new, comprehensive services to the public, i.e., location, data and voice services. TIA and Part 15 commenters, in general, have turned the technical evidence on its head. The problem is the interference to fixed site LMS stations from particular Part 15 devices[6] and not unproven or

---

3 Consolidated Opposition to Petitions for Reconsideration and Clarification, May 24, 1995, at 13.

4 *Id*, at 13.

5 TIA Comments, May 24, 1995, para 29.

6 It is only the outdoor devices which present a potential interference threat, in particular those Part 15 systems which intend to have a saturated coverage. It is these particular systems that will cause extremely high sources of interference to the "consumer" Part 15 devices.

insignificant interference from LMS systems to Part 15 devices. There is no real reason why LMS should not offer voice and interconnect services, since their availability will not alter the insignificant interference effect on Part 15 at all.[7]

IV. There is total consensus among the multilateration LMS commenters for Revision of the Commission's original Emission Mask specification.

The LMS community has reached consensus regarding relaxation of the Commission's overly restrictive emission mask specification. The responses of TIA and Utilities to the LMS proposed emission mask specifications disregard the prior document produced by MobileVision in support of the proposed specifications which clearly explains why the relaxation of 21.106(a)(2) was requested. Utilities' accusation of Teletrac requiring the bandwidth for non-location purposes is spacious[8] and show its apparent complete lack of knowledge on both the Teletrac system and spread spectrum spectra. The proposed specification needs to meet the various allocated bands encountered by the LMS providers. For example, neither TIA nor Utilities have an appreciation of the design problems that have to be overcome in order to transmit at sufficient power and reduce sidelobes to a reasonable level.

The proposed relaxations of 21.1O6(a)(2) are based and justified on the fact that the LMS emission mask is applied to mobiles at ground levels. While TIA recognizes the need for "affordable wireless communication" as a design objective,[9] it is strange that they did not instantly appreciate that there is a significant difference in a transmission from a fixed site at elevated heights and a mobile transmitter on the ground. The transmission at ground greatly decreases the effective transmitted power compared to an antenna at elevated height and the use of filters is greatly restricted in a mobile, cost-effective, design, which is not the case for a fixed

---

7 Technical paper, "Desensitization Calculations for Part 15 devices and Wideband LMS," submitted December 13, 1994.

8 Affidavit to Comment on Petitions for Reconsideration, ad Hoc Gas Distribution Utilities Coalition, May 24, 1995, paragraphs 9 and 10.

9 Attachment - page 5 to TIA Comments, May 24, 1995.

site station. There is therefore very good reason to relax the specification. MobileVision has been consistent in proposing a specification along these lines.[10]

In addition, TIA does not appear to understand the reason why a 100 kHz measuring bandwidth was requested and tries to imply that there is some sinister plot behind it.[11] If they had read and understood the discussion in MobileVision's supporting paper[12] (and in particular footnote 15), it would be clear that as Pinpoint transmissions have spectral lines that are spaced approximately 90 kHz apart, Pinpoint would be at a significant disadvantage if the measuring bandwidth was made only 4 kHz. Thus, Pinpoint would not have the expected reduction factor due to bandwidth that would be experienced by the other systems. A wider bandwidth was therefore proposed and the specification adjusted: a perfectly logical and fair amendment to the specification.

V. The Commission should make me Part 15 presumption of non-interference rebuttable.

MobileVision concurs with the Commission regarding the secondary nature of Part 15 devices and applauds the Commission for its clarification of what constitutes harmful interference.

The Part 15 community filings and ex-parte statements have expressed concerns which have been clearly addressed by the LMS industry and the LMS industry has advanced substantial evidence proving the following points:

1) Only in a few, isolated cases will it be necessary to resolve an interference problem of a Part 15 device to an LMS site, and these cases

---

10 MobileVision Further Comments, March 29,1994, Annex 3 and Ex Parte Statement, August 11, 1994, Annex 2.

11 TIA Comments, May 24, 1995, p. 8, ". . .the proposal to use a 100 kHz measurement bandwidth . . . does not seem to be justified by any compelling logic."

12 Annex 1 to MobileVision's Petition for Reconsideration, April 24, 1994, at p. 5.

are, in practice, limited mostly to field disturbance sensor devices and outdoor pint-to-point links.[13]

2) Part 15 devices, operating on the same frequencies as the LMS systems, will experience less interference from LMS systems than the interference that could be ejected from other Part 15 devices.[14]

In its comments, TIA offers no solution to an LMS provider if its fixed site is rendered unusable by an interfering Part 15 device. Instead, TIA ignores all the previous comments of all the LMS providers on this matter, and states simply that because Teletrac did not deal with the subject in its Petition, it is not a problem.[15] Teletrac has certainly made its position clear in its earlier and later comments.[16] It is clear, from comments put forward by every LMS provider, the potential interference from certain Part 15 devices is of major concern and that, in every conceivable case, there would be a simple solution. That solution, in practice, would require simple actions by the Part 15 user/supplier. Without some form of incentive, however, the LMS providers believe that the Part 15 user/suppliers would have no reason to cooperate, a belief reinforced by the record of these proceedings. The need for a rebuttable presumption is apparent and compelling.

---

13 See also "LMS Consensus Position on Part 15 Interference," June 22, 1994.

14 Reference "Interference Analysis of Part 15 Devices and LMS Systems - Initial Calculations," Annex 2, Further Comments of MobileVision, March 15, 1994.

Tables 6 and 16 show that the near-far-ratios for interference to indoor Part 15 devices are worse from outdoor Part 15 devices than LMS mobiles. Tables 13 and 15 show that the interference to outdoor Part 15 devices, from LMS mobiles, is less than that from other outdoor Part 15 devices.

It should also be noted that the transmission from an LMS mobile is very short in duration and that the probability that an LMS mobile is in the area and transmitting is very small, whereas an outdoor Part 15 device will tend to be stationary.

15 TIA Comments, May 24, 1995, p. 3.

16 Teletrac's Consolidated Opposition to Petitions for Reconsideration and Clarification, May 24, 1995, Section II A, pp. 2-8.

Contrary to TIA's criticism of SBMS for not specifying a "valid demonstration of interference" as criteria for rebutting the presumption, the LMS providers on whole have put forward several reasonable criteria for demonstrating interference, all of which are supported by exacting analysis and reasoning.[17] In the cases where harmful interference to an LMS site, from a Part 15 device which meets the height and power restrictions, can be clearly demonstrated and measured, the Commission should allow the LMS provider to have recourse. The onus would clearly remain on the LMS provider to prove the interference and to suggest reasonable solutions, but the incentive to co-operate must be contained in the rule.

VI The Commission should amend the Part 15 transmitter height/power formula

TIA's response to Pinpoint's argument that the power/height derating should be tighter, is misleading. They confirm Pinpoint's figures and then proceed to choose the particular case of "large city" environment, to show that, in this case, the figures are different. The ""Hata" model covers urban, suburban and open-country conditions. Only in the particular case of a "large city' condition, is the effect of the mobile antenna height changed. Furthermore, the large city condition is only met when the average height of the buildings is over 15 meters. Therefore, in practice for the USA the medium-small city correction factor for mobile antenna height dominates and it is perfectly right to use it as the general condition. Pinpoint took the correct set of conditions in arriving at their figures and as such have a perfectly good case for stating that the power/height derating formula is not correct.

Clearly the Commission used the Egli formula in arriving at their formula, and as such it is correct. If the Hata model is the more acceptable, as appears to be the case, then the power should be adjusted below 1W by 2.56(hm-5) dB.[18] Accepting that the Hata formula is

---

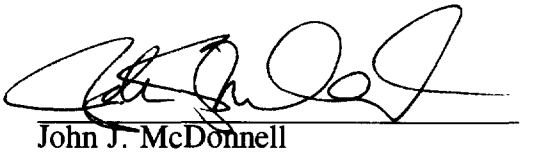
17 In particular, Annex 1 to MobileVision's Ex-Parte statement, August 11, 1994 "Technical Note, Definition of Harmful Interference for Outdoor Part 15 Interference on Wideband LMS." Also "LMS Consensus Position on Part 15 Interference," June 22, 1994, ex-parte submission June 23, 1994.

18 This is simply derived from the "Hata formula for urban, medium-small city conditions

the predominant propagation formula in use, and the one that is universally accepted, the Commission should in fact, amend the transmitting height/power formula to 2.56(hm-5) dB.

Respectfully submitted,

MOBILEVISION, L.P.



John J. McDonnell
REED SMITH SHAW & MCCLAY
1200 18th Street, N.W.
Washington, D.C. 20036
(202) 457-8646

Counsel for MobileVision, L.P.

June 2, 1995

---

where the propagation loss is proportional to (1.1 log f-0.7) hm. For f=915 MHz the loss is proportional to 2.56 hm dB. The formula is only strictly true for mobile antenna heights up to 10 m, but extrapolation to 15 m would seem to be reasonable in this case.

CERTIFICATE OF SERVICE

I, América G. Wear, a secretary at the firm of Reed Smith Shaw & McClay, do certify that copies of the foregoing Petition for Late Acceptance and Opposition to and Comments on Petitions for Reconsideration were mailed this 2nd day of June, 1995, via U.S. mail, postage prepaid, first class, to the offices of:

Allan R. Adler, Esq.
Cohn and Marks
1333 New Hampshire Ave., N.W.
Suite 600
Washington, D.C. 20036-1573

Daniel S. Goldberg, Esq.
Goldberg, Godles, Wiener & Wright
1229 Nineteenth St., N.W.
Washington, D.C. 20036

Gordon M. Ambach, Esq.
Council of Chief State School Officers
One Massachusetts Ave., N.W.
Suite 700
Washington, D.C. 20001-1431

Mr. McNeil Bryan
Uniplex Corporation
2905 Country Drive
St. Paul, MN 55117

Kelly D. Dahlman
Texas Instruments Incorporated
13510 North Central Expressway
P.O. Box 655474, MS 241
Dallas, TX 75265

Gary M. Epstein, Esq.
Latham & Watkins
1001 Pennsylvania Ave., N.W.
Washington, D.C. 20004

Theresa Fenelon, Esq.
Pillsbury, Madison & Sutro
1050 Connecticut Ave., N.W.
Suite 1200
Washington, D.C. 20036

Lawrence J. Movshin, Esq.
Wilkinson, Barker, Knauer & Quinn
1735 New York Ave., N.W.
Washington, D.C. 20006

George L. Lyon, Jr., Esq.
Lukas, McGowan, Nace &
Gutierrez, Chartered
1111 19th St., N.W.
Suite 1200
Washington, D.C. 20036

Jeffrey L. Sheldon, Esq.
UTC
1140 Connecticut Ave., N.W.
Suite 1140
Washington, D.C. 20036

Daniel S. Goldberg, Esq.
Goldberg, Godles, Wiener & Wright
1229 19th Street, N.W.
Washington, D.C. 20036

Henry Goldberg, Esq.
Goldberg, Godles, Wiener & Wright
1229 19th Street, N.W.
Washington, D.C. 20036

Louis Gurman, Esq.
Gurman, Kurtis, Blask & Freedman,
Chartered
1400 16th Street, N.W.
Suite 500
Washington, D.C. 20036

David E. Hilliard, Esq.
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20006

Robert B. Kelly, Esq.
Kelly & Povich, P.C.
1101 30th Street, N.W.
Suite 300
Washington, D.C. 20007

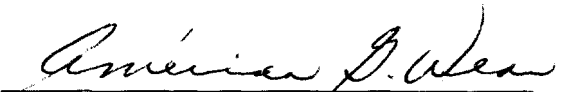
Andrew D. Lipman, Esq.
Swidler & Berlin, Chartered
3000 K Street, N.W.
Suite 300
Washington, D.C. 20007

Kathleen Abernathy, Esq.
AirTouch Communications
1818 N Streets, N.W.
Washington, D.C. 20036

Henry M. Rivera, Esq.
Larry S. Solomon, Esq.
Ginsburg, Feldman & Bress
1250 Connecticut Ave., N.W.
Washington, D.C. 20036

Edward A. Yorkgitis, Jr., Esq.
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20006

Henrietta Wright, Esq.
Goldberg, Godles, Wiener & Wright
1229 19th Street, N.W.
Washington, D.C. 20036



América G. Wear